Fermilab Today

Tuesday, January 23, 2007



## Calendar

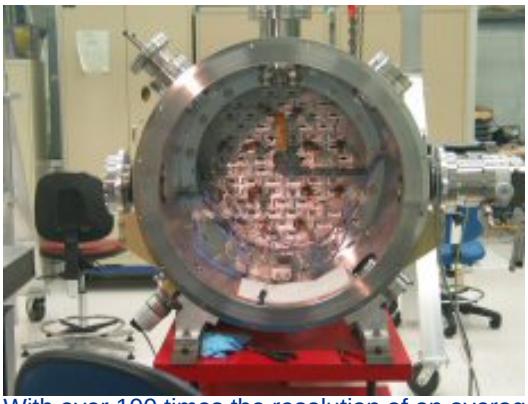
**Tue., January 23**
**11:00 a.m.** Academic Lecture Series - 1 West
Speaker: E. Lunghi, Fermilab
Title: Course 3, Part 1 - Flavor Physics In and Beyond the SM; CP Violation
**11:00 a.m.** Computing Techniques Seminar - FCC1
Speaker: D. Evans, Fermilab
Title: CMS ProdAgent and Production Infrastructure
**2:30 p.m.** Particle Astrophysics Seminar - (NOTE DATE) - Curia II
Speaker: J. Weller, University College London
Title: Cosmology with Sunyaev-Zel'dovich Galaxy Cluster Counts
**3:30 p.m.** Director's Coffee Break - 2nd floor crossover
**4:00 p.m.** Accelerator Physics and Technology Seminar - 1 West
Speaker: Y. Sato, University of Indiana
Title: Electron-Proton Dynamics for Long Proton Bunches in High Intensity Proton Rings

**Wed., January 24**
**12:00 p.m.** Wellness Works Brown Bag Seminar - Curia II
Speaker: J. Fitzsimmons, Assistant States Attorney for Kane County
Title: Avoiding Internet Predators and Scams
**3:30 p.m.** DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
**4:00 p.m.** Fermilab Colloquium - 1 West
Speaker: G. Gabrielse, Harvard University
Title: New Measurement of the Electron Magnetic Moment and the Fine Structure Constant

THERE WILL BE NO FERMILAB ILC R&D

## Feature

# Dark energy, say 'cheese'



With over 100 times the resolution of an average digital camera, this giant contraption would take detailed photos of the night sky.

Most people these days want tiny, lightweight digital cameras that slide into their wallets alongside their credit cards. But what if you want to take a picture of something really big? Like, say, the universe? You might just need a really big camera.

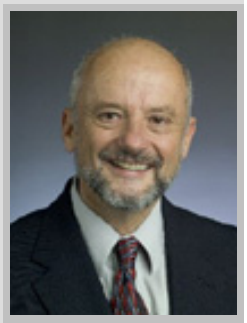
Fermilab astrophysicists and their collaborators from the Dark Energy Survey have spent the last three years developing the largest digital camera in the world. The camera stands over a half meter in diameter and will be installed onto the 4-meter Blanco Telescope at the Cerro Tololo Inter-American Observatory in Chile. Its 520 megapixels, large size and ultra-sensitive silicon detectors will help the collaboration search the night sky for evidence of the bizarre stuff that makes up over two-thirds of the universe: dark energy.

Although dark energy might account for the universe's puzzling, accelerating expansion, its physical properties remain a mystery. Dark Energy Survey physicists will use the giant camera to observe dark energy in four different ways: through supernova distances, light lensing, and both structure and timing of galaxy clustering. "If we used just one technology, we'd have systematic problems," said Brenna Flaugher, the lead scientist for the camera construction project. The four techniques will allow scientists to cross-check their results.

The hard part, however, is creating a really big camera. The key to the camera's performance

## Director's Corner

# Solidarity



Pier Oddone

The uncertainty created by the threat of a continuing resolution for the remainder of fiscal year 2007 affects not only Fermilab but many other institutions that have significant programs in the physical sciences. Over the last month, we and others have explained the consequences of a continuing resolution at the FY2006 funding level. I have made the case for the value of the national laboratories and articulated the setback that a CR at the FY2006 level would have for Fermilab. The DOE has compiled the adverse impacts on all its programs across laboratories and universities and made them public. Numerous publications, including the *New York Times* and *Nature*, have also described the alarming consequences for the competitiveness and innovation agenda of our country.

At the national level, many science organizations have urged their constituents to express their views. Among these organizations are the Universities Research Association, the American Physical Society and the Association of American Universities. Here in Illinois, the six major research universities have written a letter to the Illinois senators and representatives and the President of the University of Chicago, Robert Zimmer, and the Chairman of the University's Board of Trustees, James Crown, have written to the Speaker of the House, Nancy Pelosi. Similar letters have been written by many others. Members of Congress on both sides of the aisle have weighed in with "Dear Colleague" letters co-signed by a large number of legislators both in the House and Senate.

Over the next couple of weeks Congress will make difficult choices among competing priorities and with very limited resources. The country is in a difficult period and the FY07 budget is late. Whatever the outcome of the congressional deliberations, you should rest

MEETING THIS WEEK

**Click here for NALCAL, a weekly calendar with links to additional information.**

## Weather

**Cloudy 29°/17°**

Extended Forecast
Weather at Fermilab

## Current Security Status

Secon Level 3

## Wilson Hall Cafe

**Tuesday, January 23**
Chicken and Rice Soup
Cowboy Burger
Baked Meatloaf with Gravy
Parmesan Baked Fish
Peppered Beef
Assorted Slice Pizza
Chipotle Chili and Queso Nachos Supreme

Wilson Hall Cafe Menu

## Chez Leon

**Wednesday, January 24**
**Lunch**
Grilled Salmon Fillet with Scallion Sauce
Winter Vegetable Medley
Mocha Profiteroles

**Thursday, January 25**
**Dinner**
Bacon Wrapped Sea Scallops
Ancho Fired Pork Tenderloin
Sweet Potato Stew
Rum Raisin Soufflé

Chez Leon Menu
Call x4598 to make your reservation.

## Archives

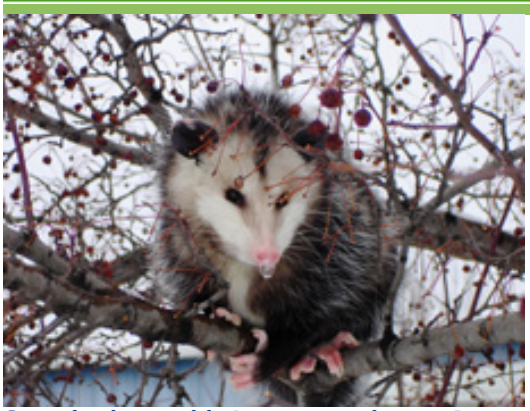
is a series of 62 silicon sensors, or charge-coupled devices (CCDs). After careful assembly at SiDet, Juan Estrada, co-manager with Tom Diehl of the focal plane detector, tests each charge-coupled device individually with different wavelengths of light. After these rigorous tests, only about 25 percent of the individual devices conform to the quality standards; the rest are rejected. "We want to understand how they will perform under different optical conditions in the telescope," Estrada said. The sensors are sensitive to longer light wavelengths than any previous optical camera, allowing scientists to get deeper in the sky without using long exposure times.

Though it is still in the R&D phase, the proposed camera could begin observations as soon as 2010, and run for 5 years. Researchers hope that's long enough to find the photogenic side of dark energy.

*--Christine Buckley*

Some of the approximately 100 members of the Dark Energy Survey collaboration say "cheese" in front of the SiDet building.

## Photo of the Day



**Somebody get this 'possum a tissue:** Jenny Thorson of Transportation Services took this picture of an opossum yesterday in front of Warehouse 2 at Site 38. "He appears to be cold as he has an icicle hanging from his nose," she writes. "Or maybe he's sick and he needs a tissue."

assured that the national scientific community has expressed the consequences of a continuing resolution eloquently, and many members of Congress are listening.

## Readers Write

### Older and wiser?

**Dear FT:**

I just want to be on record as objecting to the aging tips in yesterday's *Fermilab Today* -- I am as sharp as I was the day I turned 30.

Did I mention that I object to the aging tips?

*--April Burke,*
*Lewis-Burke Associates, LLC*

## Accelerator Update

**January 19 - 22**
- Four stores provided 57 hours and 52 minutes of luminosity
- MI has RF, vacuum, and beam position problems
- Recycler emittance trouble
- Linac had LRF2 trouble
- Sparking limits the H- Source output
- TeV B17 separator fails

Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

## Announcements

**Metra survey**
Metra has extended the deadline for employees and neighbors to participate in a survey about the proposed STAR Line railroad along the east side of Fermilab. Almost 200 Fermilab employees and users have participated so far. Other people can still take the survey until Friday, January 26. Please read this article for more information and a link to the survey.

**Flu Shots Still Available in the Medical Office/ WH GF-NW**
It is worthwhile to get flu vaccine through the middle of February. Free flu vaccine shots will be available to all active full-time employees, term and temporary employees. Call 840-3232 to schedule an office visit.

**Digital Certificates Training (No Fee)**
The Office for Professional and Organization Development is offering digital certificate training at no charge. Digital certificates are commonly used at Fermilab and the broader

**Fermilab Today**

**Result of the Week**

**Safety Tip of the Week**

**ILC NewsLine**

**Info**

Fermilab Today is online at:
www.fnal.gov/today/

Send comments and suggestions to:
today@fnal.gov

**In the News**

## *Wisconsin State Journal* January 18, 2007:

### South Pole project probes depths of universe

Let's say that somewhere on the edge of the universe, a sun explodes.

It is next to impossible for most of us to conjure such a cataclysm, let alone think about the possibility of capturing cosmic debris from the ruined star.

Yet, such is the imagination of science that physicists from UW-Madison have come up with a way to cast a net that does this very thing - snag particles that have traveled to Earth from mysterious disasters elsewhere in our universe.

**Read More**

open science community. When shopping online, the underlying technology that allows a transaction to remain secure is based on the use of digital certificates. Fermilab is now offering a beginning level course that will provide a background on certificates, then give specific instructions on how to install certificates in your browser, including the two most popular certificates at Fermilab: KCAs and DOEGrids. Internet Explorer, the Netscape family, and Safari will be addressed. You will have the opportunity to create your own digital certificate in the new hands-on portion of this class. Classes are scheduled for Jan. 19th, Feb. 15th, and March 12th. To enroll in one of the sessions please visit the enrollment website.

**Upcoming Activities**